## ASSIGNMENT 14

Textbook Assignment: "Data Conversion Devices and Switchboards," chapter 13, pages 13-5 through 13-41.

IN ANSWERING QUESTIONS 14-1 THROUGH 14-4, SELECT FROM THE FOLLOWING LIST THE SYNCHRO SYSTEM DESCRIBED BY THE QUESTION. ANSWERS MAY BE USED MORE THAN ONCE.

1. Single-speed synchro
2. Multispeed synchro
3. Dual-speed synchro

14-1. Allows for a coarse value and a fine value to be sent at the same time.

14-2. Uses more than one speed of data transmission.

14-3. Uses a single synchro transmitter to transmit the entire range of data.

14-4. Is the least accurate synchro system.

14-5. In a dual-speed synchro system, which of the following values is/are sent by the synchro with (a) the highest ratio and (b) the lowest ratio?

1. (a) Coarse only
   (b) Fine only
2. (a) Fine only
   (b) Coarse only
3. (a) Coarse only
   (b) Fine and coarse
4. (a) Fine and coarse
   (b) Fine and coarse

14-6. At any instant, the amplitude and polarity of the stator voltages, when compared to the supply or reference voltage, indicate the angular position of the rotor.

1. True
2. False

14-7. The sector conversion method divides the 360° of rotation into what total number of sectors?

1. 6
2. 8
3. 45
4. 60

IN ANSWERING QUESTIONS 14-8 AND 14-9, REFER TO TABLE 13-2 ON PAGE 13-7 OF THE TEXT.

14-8. When the stator voltages S1 and S3 are in phase with the reference and S2 is out of phase, what sector is selected?

1. 30° to 90°
2. 90° to 150°
3. 150° to 210°
4. 330° to 30°

14-9. When the stator voltages S1 and S2 are in phase with the reference and S3 is out of phase, what sector is selected?

1. 30° to 90°
2. 90° to 150°
3. 150° to 210°
4. 270° to 330°

14-10. What is the total number of stator voltages required to determine the ratio angle once the sector has been determined?

1. One
2. Two
3. Three
4. Four

14-11. During the octant conversion process, the 45-degree octant is determined by which of the following means?

1. The polarity and amplitude of two of the stator voltages
2. The polarity and amplitude of the sine and cosine voltages
3. The phase difference between two of the stator voltages
4. The phase difference between the sine and cosine voltages

14-12. Once the octant has been determined during the octant conversion process, the remaining bit positions of the BAM word are determined by a trial and error approximation of a test binary angle against a ratio angle.

1. True
2. False

14-13. How many synchro-to-digital conversions are required to generate a single BAM word from a dual-speed synchro input?

1. One
2. Two
3. Eight
4. Four

14-14. Linear signals normally represent a quantity based on which of the following characteristics?

1. Signal amplitude
2. Signal frequency
3. Signal phase relationship
4. All of the above

14-15. Scalar or resolver outputs are composed of which of the following signals?

1. A single linear waveform
2. A single waveform representing the sine of an angle
3. A single waveform representing the cosine of an angle
4. Two waveforms representing the sine and cosine of an angle

14-16. The binary input to digital-to-analog converters is normally in which of the following binary forms?

1. Binary-coded decimal
2. Gray code
3. Binary angular measurement word
4. Natural binary

14-17. A single digital-to-analog converter outputs what maximum number of proportional voltage signals?

1. One
2. Two
3. Three
4. Four

14-18. What maximum number of DACs can be mounted on a mounting base?

1. One
2. Two
3. Three
4. Four

14-19. Which of the following functions is/are performed by the BASE?

1. Selects the DAC operating mode
2. Provides all electrical interfaces for the DACs
3. Provides simulated digital data for test purposes
4. All of the above

14-20. Each channel of a DAC can output which of the following signals?

1. Two linear voltages
2. A single-speed synchro
3. A sine/cosine resolver
4. All of the above, depending on the operational mode selected

14-21. Which of the following functions is NOT performed by the EF and control address words?

1. Master clear the DAC
2. Initiate RDUC operations
3. Set the individual DAC's control address
4. Define the control address of the DAC to receive the data words

14-22. What is the maximum number of data words that can be sent in an output buffer to the DAC/BASE?

1. 8
2. 10
3. 12
4. 16

14-23. Individual DAC channels are identified by what code?

1. The A channel code
2. The B channel code
3. The data address code
4. The control address code

IN ANSWERING QUESTIONS 14-24 THROUGH 14-27, SELECT FROM THE FOLLOWING LIST THE FUNCTIONAL SECTION OF THE DAC FUNCTION DESCRIBED IN THE QUESTION. ANSWERS MAY BE USED MORE THAN ONCE.

1. Analog section
2. Digital section
3. Power supply section

14-24. Generates the ODR signal to the computer to start the data word processing.

14-25. Contains resistive ladder networks.

14-26. Provides five regulated dc voltages.

14-27. Converts the output of the holding registers to proportional voltages.

14-28. Which of the following DAC sub-channels outputs the SINE waveform when in the TRIG mode?

1. A
2. B
3. A1
4. A2

14-29. Which of the following DAC sub-channels outputs linear waveforms when in the LINEAR mode?

1. A
2. A1 only
3. A2 only
4. A1 and A2

14-30. Which of the following BASE controls allows for the selection of simulated test data from the BASE switches?

1. Mode control
2. Digital input
3. Channel A mode
4. Channel A data address

14-31. The selection of synchro or resolver output is performed by which of the following DAC/BASE controls?

1. Mode control only
2. Channel A mode only
3. Both mode control and channel A mode
4. Channel A data address

14-32. The digital-to-synchro converter in the DAC converts BAM data words to which of the following types of outputs?

1. Linear voltages
2. Sine and cosine voltages
3. Dual-speed synchro signals
4. Single-speed synchro signals

14-33, The KCMX can accept demand digital from what maximum number of devices?

1. 8
2. 16
3. 24
4. 32

14-34. Multiplexing data converters allow the CDS computer to communicate with a variety of analog and digital equipments.

1. True
2. False

IN ANSWERING QUESTIONS 14-35 THROUGH 14-37, SELECT FROM THE FOLLOWING LIST THE DEMAND DIGITAL CONTROL SIGNAL FOR THE FUNCTION DESCRIBED IN THE QUESTION. NOT ALL ANSWERS ARE USED.

1. Enter signal
2. Read signal
3. Error signal
4. Demand digital interrupt

14-35. A program controlled function signal.

14-36. Generated when a data entry device has input ready for transmission to the controlling computer.

14-37. Activates the DD device data lines.

14-38. The KCMX can accept ready digital data from what maximum number of inputs?

1. 8
2. 16
3. 24
4. 32

14-39. The KCMX is capable of communicating with digital devices over what total number of DIC/DOC channels?

1. One
2. Two
3. Three
4. Four

14-40. The KCMX can receive what maximum number of status signals?

1. 60
2. 45
3. 30
4. 15

14-41. On KCMX ready analog inputs, which of the following types of conversion is performed?

1. Digital-to-linear
2. Digital-to-synchro
3. Linear-to-digital
4. Synchro-to-digital

14-42. The KCMX uses what maximum number of reference voltages to perform synchro-to-digital conversions on ready analog inputs?

1. 8
2. 12
3. 16
4. 20

14-43. The computer input data register is located on which of the following KCMX panels?

1. A1
2. A2
3. A3
4. A4

14-44. The DD/DDI select ON/OFF switches on the KCMX perform which of the following functions?

1. They identify the group mode
2. They indicate if an ENTER signal is on the line
3. They enable or disable the individual device DDI enter signals
4. All of the above

14-45 Which of the following KCMX controls/ indicators indicates the status of individual external signals?

1. Data register
2. Output register
3. Control output register
4. Computer input data register

14-46 DOC equipment output data maybe viewed using which of the following registers?

1. Data register
2. Output register
3. Control output register
4. Computer input data register

14-47. Which of the following duplex controls/ indicators is/are lighted to indicate that computer A is in control of the KCMX and has received an input data request from computer A?

1. The A ODR
2. The A IDR only
3. The A IN CONTROL only
4. Both the A IDR and the A IN CONTROL

14-48. Which of the following MODE SELECT switch positions enables the KCMX to simulate computer operations by use of the front panel controls?

1. DOC
2. MANUAL
3. NORM
4. A/D CONV

14-49. Which of the following KCMX pushbuttons is used to reset all logic circuits?

1. BFE
2. DATA
3. MASTER CLEAR
4. ADDRESS CLEAR

14-50. Which of the following KCMX indicators maybe used to display the starting address of a set of addresses to be interrogated in test mode?

1. INTERRUPTS
2. FINAL ADDRESS
3. ADDRESS CLEAR
4. CURRENT ADDRESS

14-51. Which of the following operations is indicated by a lighted CONTROL CHANNEL indicator?

1. A simulated DOC input
2. An external function
3. The KCMX is in test mode
4. A control word transfer

14-52. When address 77 is detected in the FINAL ADDRESS, which of the following interrupt indicators is lighted?

1. ID ERR
2. DIC REQ
3. ILL ADR
4. Each of the above

14-53. When the KCMX has granted control to computer A or B, which of the following KCMX indicators is lighted?

1. DATA
2. INCONTROL
3. EOC ENABLE
4. COMPUTER ACKNOWLEDGE

14-54. When in the DIC computer mode, the DIC channel EF/INT and OA/IDR indicators light for interrupts and input data requests.

1. True
2. False

14-55. Which of the following positions should the SELECTOR switch be into simulate a 120-degree angle?

1. 1
2. 2
3. 3
4. 4

14-56. On digital switchboards, what is the minimum number of manual switches required for each I/O device or computer channel?

1. One
2. Two
3. Three
4. Four

14-57. Control signals used to initiate switching action are generated by which of the following devices?

1. DFCS only
2. CSCP only
3. Both DFCS and CSCP

14-58. Each DFCS section contains what maximum number of switch panels?

1. 12
2. 18
3. 24
4. 32

14-59. Linear movement switch panels contain assemblies that can be switched to which of the following number of positions?

1. Six
2. Five only
3. Three only
4. Either three or five, depending on the type of assembly

14-60. The switch control and potential transformer ACO assembly is used to provide voltages for bench testing which of the following DFCS panels?

1. Relay tester assemblies
2. Power distribution panels
3. Linear movement switches
4. All of the above

14-61. What color CSCP pushbutton/indicator (PBI) will be lighted when the associated DFCS linear slide switch is in the ALTERNATE position?

1. Red
2. White
3. Green
4. Yellow

14-62. What color CSCP PBI will be lighted when the associated DFCS linear slide switch is in the OFF position?

1. Red
2. White
3. Green
4. Yellow

14-63. The DFCS can be controlled from two or more CSCPs at the same time.

1. True
2. False

14-64, Ship's cables are identified by which of the following markings?

1. Wire number
2. Cable type only
3. Cable group number only
4. Cable type and group number

14-65. A ship's wire has a plastic number with the following markings" **"65 PD 632."** The number 632 indicates what designation?

1. Cable number
2. Function number
3. Circuit designator
4. Assigned wire number

14-66. Which of the following designations maybe used to identify a CSCP 85-pin connector?

1. JA
2. JB
3. JK
4. JP

14-67. Each analog switchboard section contains what maximum number of panels?

1. 2
2. 12
3. 24
4. 36

IN ANSWERING QUESTIONS 14-68 THROUGH 14-72, SELECT FROM THE FOLLOWING LIST THE ANALOG SWITCHBOARD PANEL WHOSE FUNCTION IS DESCRIBED IN THE QUESTION. ANSWERS MAY BE USED MORE THAN ONCE.

1. Indicator panel assembly
2. Fuse panel assembly
3. Meter panel assembly
4. Flasher panel assembly

14-68. Contains overflow fuses for associated switch panels.

14-69. Monitors ac or dc power busses.

14-70. Uses a motor driven cam to open or close control or status signal circuits.

14-71. Provides a visual indication of the active power being supplied to the switchboard.

14-72. Indicates a warning or emergency condition.

14-73. Which of the following switches are used to connect shipboard power supplies to the switchboard power busses?

1. Snap switches
2. Linear slide switches
3. Manually operated JR switches
4. Remotely operated JR switches

14-74. What type of switches are found in a remotely operated JR switch assembly?

1. JR
2. AJR
3. Snap
4. Linear movement

14-75. When a control signal is fed back to the KCMX as a status signal input by the switchboard for test purposes, the switchboard is in which of the following configurations?

1. OFF
2. EAT
3. NORMAL
4. ALTERNATE